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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/826,752	04/16/2004	Romeo Emmanuel P. Alvarez	APS01-002B	1220
7590	01/26/2007		EXAMINER	
George O. Saile 28 Davis Avenue Poughkeepsie, NY 12603			MITCHELL, JAMES M	
			ART UNIT	PAPER NUMBER
			2813	
SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE		
3 MONTHS	01/26/2007	PAPER		

**Please find below and/or attached an Office communication concerning this application or proceeding.**

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

<b>Office Action Summary</b>	<b>Application No.</b>	<b>Applicant(s)</b>
	10/826,752	ALVAREZ, ROMEO EMMANUEL P.
	Examiner James M. Mitchell	Art Unit 2813

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### **Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

## Status

1)  Responsive to communication(s) filed on 03 November 2006.

2a)  This action is **FINAL**.                            2b)  This action is non-final.

3)  Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

## **Disposition of Claims**

4)  Claim(s) 21-26,28 and 29 is/are pending in the application.  
4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.

5)  Claim(s) \_\_\_\_\_ is/are allowed.

6)  Claim(s) 21-26,28 and 29 is/are rejected.

7)  Claim(s) \_\_\_\_\_ is/are objected to.

8)  Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

## Application Papers

9)  The specification is objected to by the Examiner.

10)  The drawing(s) filed on \_\_\_\_\_ is/are: a)  accepted or b)  objected to by the Examiner.

    Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

    Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)  The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

12)  Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
a)  All   b)  Some \* c)  None of:  
1.  Certified copies of the priority documents have been received.  
2.  Certified copies of the priority documents have been received in Application No. 10/315,534.  
3.  Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

1)  Notice of References Cited (PTO-892)  
2)  Notice of Draftsperson's Patent Drawing Review (PTO-948)  
3)  Information Disclosure Statement(s) (PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_\_

4)  Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_.  
5)  Notice of Informal Patent Application  
6)  Other: \_\_\_\_\_

## DETAILED ACTION

This office action is in response to applicant's request for continued examination filed November 3, 2006.

### ***Claim Rejections - 35 USC § 103***

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 21-24, 26, 28 and 29 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sakurai et al. (U.S. 2001/0040290) in combination with Christiansen et al. (U.S. 4,996,629).

4. Sakurai (Fig. 1, 2, 12) discloses:

(cl. 21) a wafer level chip scale package comprising; a semiconductor die (10) having a plurality of pads (12) on a surface; conductors (90) coupled to and extending vertically (e.g. in vertical direction) a first predetermined distance from the surface of the semiconductor die; an etch resistant layer (92) on free ends of the vertical conductors; a layer of insulation (14) on the surface, the layer of insulation having an exposed surface (e.g. exposing surface of pad; Fig. 2b) a second predetermined distance from the surface of the semiconductor die, wherein the second predetermined distance is less than the first predetermined distance and wherein said layer of insulation partially covers lower portions of side surfaces (e.g. lower vertical portion of conductor covered)

of substantially all of the conductors; and reflowable material (44) attached to the etch resistant layer and to at least portions of side surfaces of substantially all of the conductors (Fig. 12b);

(cl. 22) wherein the conductors comprise copper conductors (Par. 0103);

(cl. 24) wherein the etch resistant layer comprises a layer of gold (0145; Par. 160);

(cl. 26) wherein the thickness of the layer of gold is less than the difference between the first predetermined distance and the second predetermined distance (Fig 12b);

(cl. 28) the reflowable material comprises solder (0144);

(c. 29) wherein the solder comprises eutectic solder (Par. 0147).

Sakurai does not appear to explicitly disclose its insulating passivation layer being made from epoxy.

However, Christiansen (Col. 5, Lines 2-4) teaches epoxy as a passivation material.

It would have been obvious to one of ordinary skill in the art to form the passivation of Sakurai as an epoxy to provide a passivation layer as required by Sakurai<sup>1</sup>.

Furthermore, the selection of an epoxy is known as a passivation material as evidence for example by Christiansen, therefore, it would have been obvious to one of ordinary skill in the art to select the claimed material, since it has been held that the selection of a known material based on its suitability for its intended use supported a *prima facie* obviousness determination<sup>2</sup>. Sinclair & Carroll Co. v. Interchemical

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<sup>1</sup> Materials disclosed for Sakurai were only examples (see Par. 0097).

Corp., 325 U.S. 327, 65 USPQ 297 (1945). See, M.P.E.P §2144.07.

5. With respect to the process limitation of claim 23 that copper is “plated,” the prior art structure is the same as the claimed invention. “[E]ven though product-by-process claims are limited by and defined by the process, determination of patentability is based on the product itself. The patentability of a product does not depend on its method of production. If the product in the product-by-process claim is the same as or obvious from a product of the prior art, the claim is unpatentable even though the prior product was made by a different process.” In re Thorpe, 777 F.2d 695, 698, 227 USPQ 964, 966 (Fed. Cir. 1985).

7. Claim 25 is rejected under 35 U.S.C. 103(a) as being unpatentable over Sakurai (U.S. 2001/0040290) and Christiansen et al. (U.S. 4,996,629) as applied to claim 21 and further in combination with Jin (U.S. 2003/0219966).

8. Sakurai discloses the elements stated in paragraphs 6 and 7 of this office action, but does not disclose use of a combination of nickel and gold layers under its reflowable material.

9. Jin (Fig. 12) utilizes of a combination of nickel and gold layers (30,32) under its reflowable material (36).

10. It would have been obvious to one of ordinary skill in the art to incorporate nickel with the gold of Sakurai in order to improve pitch as taught by Jin (Par. 0009-0014).

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<sup>2</sup> Applicant's lack of criticality is further evidenced by his disclosure that his material can be different types (see PGPUB 2004/0198022; Par. 0010).

Claims 21, 24, 28 and 29 are rejected under 35 U.S.C. 103(a) as being unpatentable over Zuniga-Ortiz et al. (U.S. 2003/0080392) in combination with Test al. (U.S. 6,268,662).

Zuniga (Fig. 1) discloses:

(cl. 21) a wafer level chip scale package (Par .0008) comprising; a semiconductor die (101) having a plurality of pads (104) on a surface; conductors (105, 106, 107) coupled to and extending vertically (e.g. thickness in vertical direction above insulation, 108) a first predetermined distance from the surface of the semiconductor die; an etch resistant layer (107; e.g. gold; Par. 0031) on free ends of the vertical conductors; a layer of insulation (108) on the surface, the layer of insulation having an exposed surface (e.g. exposing surface of pad, 104 ) a second predetermined distance from the surface of the semiconductor die, wherein the second predetermined distance is less than the first predetermined distance and wherein said layer of insulation partially covers lower portions of side surfaces (e.g. lower vertical portion of conductor covered) of substantially all of the conductors; and reflowable material (109) attached to the etch resistant layer and to at least portions of side surfaces of substantially all of the conductors (Fig. 1);

(cl. 24) wherein the etch resistant is gold (Par. 0031);

(cl. 28, 29) where the reflowable material is solder (Par. 0031).

Zuniga does not appear to disclose it's insulating layer made from epoxy.

However, Test (Claim 7 of Test; Col. 9, Line 5) teaches its insulating material being epoxy-based polymer.

It would have been obvious to one of ordinary skill in the art to form the insulation material of Zuniga as an epoxy to provide a polymeric material as required by Zuniga (Par. 0033)<sup>3</sup>.

Furthermore, the selection of an epoxy is known polymeric material as evidence for example by Test, therefore, it would have been obvious to one of ordinary skill in the art to select the claimed material, since it has been held that the selection of a known material based on its suitability for its intended use supported a *prima facie* obviousness determination. Sinclair & Carroll Co. v. Interchemical Corp., 325 U.S. 327, 65 USPQ 297 (1945). See, M.P.E.P §2144.07.

### ***Response to Arguments***

Applicant's arguments with respect to claims have been considered but are moot in view of the new ground(s) of rejection.

### ***Conclusion***

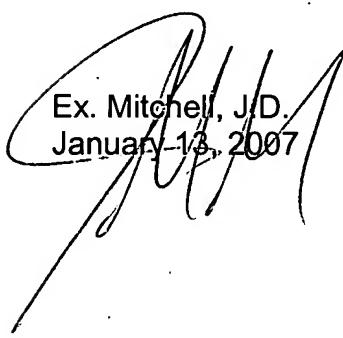
Any inquiry concerning this communication or earlier communications from the examiner should be directed to James M. Mitchell whose telephone number is (571) 272-1931. The examiner can normally be reached on M-F 8:00-4:00.

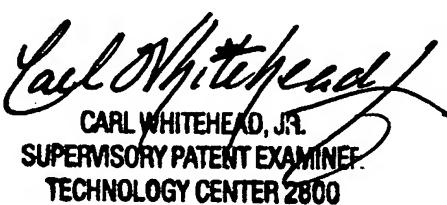
If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Carl Whitehead Jr. can be reached on (571) 272-1702. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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<sup>3</sup> Material disclosed as being polymeric with examples (see Par. 0033).

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

  
Ex. Mitchell, J.D.  
January 13, 2007

  
CARL WHITEHEAD, JR.  
SUPERVISORY PATENT EXAMINER  
TECHNOLOGY CENTER 2800